



# **USAF Built Infrastructure Inventory and Assessments Manual**

## ***Appendix for Basement Construction (A20)***

July 2017

This document includes information that shall not be disclosed outside the Government and shall not be duplicated, used or disclosed-in whole or in part-for any other purpose than the United States Air Force Built Infrastructure Assessment Program.

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## I. Overview

This manual covers the inventory and assessment process for the “Basement Construction (A20)” building system and components. This is an abbreviated manual and does not contain the same level of detail found in expanded manuals. Please see the SMS Playbook for additional information including:

- BUILDER™ Sustainment Management System Concepts
- Overview of ASTM E 1557 UNIFORMAT II Standard Classification for BUILDER™
- BUILDER™ Inventory Overview
- BUILDER™ Assessment Overview
- BUILDER™ Remote Entry Database (BRED™)
- Working with Web-Based BUILDER™
- Quality Assurance
- Site Visit Preparation and Execution
- Site Visit Safety

### A. A20 Basement Construction Description

#### 1. UNIFORMAT II definition

- Basement Construction includes the basement excavation and basement wall construction.

#### 2. Major components

- Basement Excavation (A2010) – This element is an activity and is not used in BUILDER™ SMS.
- Basement Walls (A2020) – Includes any basement wall material or construction subtype, typically concrete or Masonry (brick or concrete masonry unit).

#### 3. Lifecycle characteristics

- Basement walls are classified as very long-lived structural building components. Basement walls show slow rates of deterioration.

## II. Inventory

### A. General A20 Inventory Guidance

This section presents common UNIFORMAT II A20 Basement Construction Inventory Component Sections found across USAF installations as a guide for entering into the BUILDER™ SMS or BRED™ software. Inventory items are arranged by BUILDER™ SMS System with Material Category, Component Subtype, Quantity and Inventory Notes.

***NOTE: Currently, there are no minimum components inventoried and assessed for BUILDER™ SMS inventory for A20 for the USAF. Bases may elect to inventory and assess basement construction components. Inventory and assessment is required by the current AFCAMP Playbook as project support documentation for consideration in the project prioritization process.***

Component Subtypes General, Other, and Unknown require a Section Name to further describe the Component Sections.

It is critical to confirm the year installed (default from the Real Property Assets Database (RPAD)), or to

estimate the year installed. BUILDER™ SMS uses the Install Date, life cycle degradation curves and assessment observations to establish a Condition Index (CI) for each Component Section. If the assessor suspects the RPAD default date is not accurate or an addition or renovation has taken place, check the RPAD record for year renovated or check local as-built or renovation drawings to help determine the year installed. Estimated Install Dates decrease the Expected Service Life significantly.

If this is an initial assessment and no Basement Construction inventory has previously been entered into BUILDER™ SMS, an inventory is required. When Basement Construction is not visible, as-built drawings should be used to identify and quantify the components. If as-built drawings are not available, the assessor may use experience to make an assumption for the component subtypes and quantities based on similar construction of nearby buildings, consultation with local staff and other resources such as [www.inspectapedia.com](http://www.inspectapedia.com).

## B. Inventory A2020 Basement Walls

In coastal areas buildings with basements are uncommon due to the water table. More inland bases occasionally have basements. Typical inventory at USAF bases includes the following Component Subtypes:

- CIP Concrete SF
- Concrete Block SF

### Basement Walls A2020 Inventory Hints

- Material is almost always concrete or concrete masonry units. Classify brick as other and include a Section Name.
- Quantity is easily measured from visual observation or as-built drawings.
- Do not use BASEMENT for a Section Name in this case because inventory is entered as part of A2020 Basement Walls.
- Inventory Comments should be recorded to clarify component description if Section Name is insufficient.
- Metal arch barrel structures are covered under B1020 Roof Construction. Earthen berms (magazine roofs) are covered under B3010 as roof covering. End walls are covered under B2010 Exterior Walls.
- If basement walls are not visible, an Inspection Comment must be provided.

## III. Assessment

### A. General A20 Assessment Guidance

Basement construction component sections are assessed using Direct Condition Rating (DCR). When component sections are not visible, no assessment is required and an Age-Based Rating is given by BUILDER™ SMS. In this case BUILDER™ SMS will use the inventory year installed and software life cycle degradation curves to establish the Condition Index (CI). If basement walls are not visible an Inspection Comment must be provided.

When basement component sections are visible, they should be assessed.

**Under no circumstances should age be factored into a DCR or Distress Survey assessment. Ratings are based on condition, operability and/or survivability only. BUILDER™ SMS already factors in the age from the Install Date when BUILDER™ SMS calculates condition.**

The following conditions or events can accelerate deterioration:

- Improper construction or installation
- Settlement or subsidence
- Material damage
- Flooding
- Earthquake
- Landslide
- Soil erosion
- Moisture infiltration

The assessor may observe conditions in the visible basement major components such as cracking, displacement or other damage. These conditions may also be visible in interior or exterior walls and the floor. If observed the assessor must consider the severity and density of these conditions to determine the DCR using the DCR chart below. The assessor must provide an Inspection Comment for any Amber+ or lower DCR or BUILDER™ SMS calculated Distress Survey Rating. Photographs documenting the defects must be taken and attached to the assessment.

**NOTE: Red highlighted text is provided as an example of a life cycle of a typical components and should be adjusted as needed to represent other various components.**

Direct Condition Rating (DCR) Definitions	
Rating	Observation
Green (+)	Fully Operational - Free of Known or Observable Defects <b>Keep doing PM required to maintain warranty - no action required</b>
Green	Fully Operational - Slight Deterioration or Minimal wear <b>Keep doing PM - no action required</b>
Green (-)	Fully Operational – Normal wear and/or serviceability defects <b>Keep doing PM - need to start planning for rehabilitation</b>
Amber (+)	Reduced Operation – Minor wear and/or serviceability defects <b>Repairs could be accomplished and replacement planned within next eight to ten years (Investment of resources could extend life)</b>
Amber	Reduced Operation – Moderate wear and/or serviceability defects <b>Repairs could be accomplished and replacement planned within next six to seven years (Investment of resources could extend life)</b>

Amber (-)	Reduced Operation – Significant wear and/or serviceability defects Repairs could be accomplished and replacement planned within next three to five years (Investment of resources could extend life)
Red (+)	Loss of Operation – Moderate wear and/or serviceability failure Repairs could be accomplished and replacement planned within next two years (Run to failure -further investment unwise)
Red	Loss of Operation – Significant wear and/or serviceability failure Repairs could be accomplished and replacement planned within the next year (Run to failure -further investment unwise)
Red (-)	Loss of Operation – Complete wear and/or serviceability failure Replacement needs to be planned immediately

### B. Assessment A2020 Basement Walls

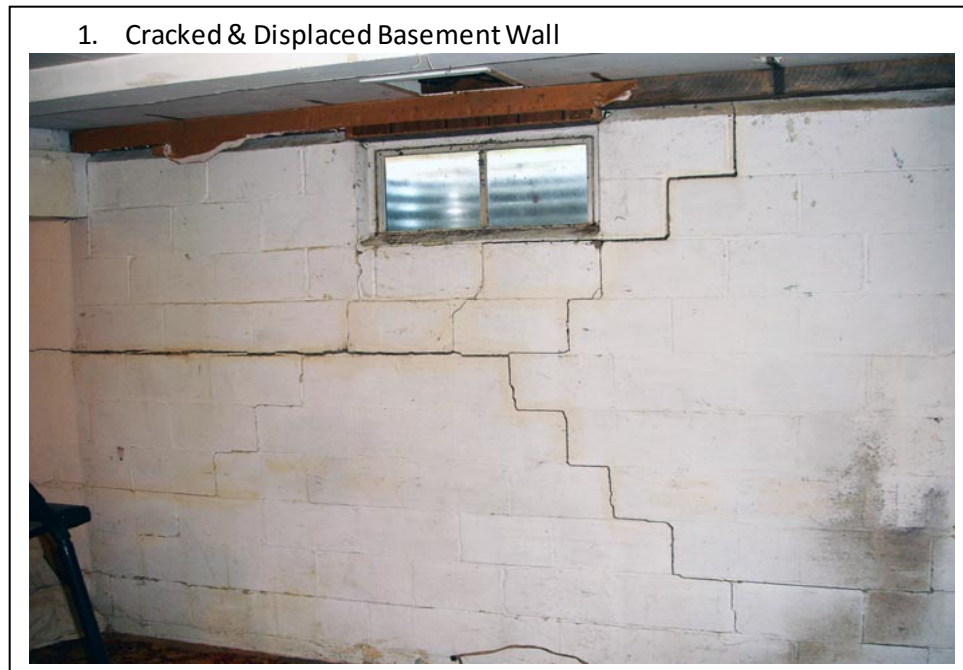
Basement walls will be visible from the interior if the basement is accessible. They may be partially visible from the exterior. If the basement is not accessible, no assessment will normally be entered unless the assessor has access to an engineering report allowing BUILDER™ to Age-Base the assessment.

Below are assessment hint questions to help the assessor determine the most appropriate DCR.

Basement Walls A2020 Assessment Hints

- If assessment “Rating” is Amber + or below, enter an Inspection Comment to describe the reason. Photographs documenting the defects must be taken and attached to the assessment. An Inspection Comment should also be entered regardless of DCR, if a significant localized issue needs to be highlighted which may not necessarily impact the overall Component Section DCR.

Examples of typical basement walls distresses or conditions include Cracks, leaks or displacement.



## IV. Inventory and Assessment Rules of Thumb

### A. Assessor Qualifications

- The architectural/structural assessor should have a combination of 8+ years of general building construction, facilities maintenance and planning/estimating experience related to building foundations, structure, enclosure and interior construction or be equivalent to a Journeyman, a V Level Technician, an Architect or a Civil Engineer. The assessor should have a working knowledge of the ASTM E 1557 Standard Classification for Building Elements UNIFORMAT II and a basic understanding of other building systems such as HVAC, Plumbing, Fire Protection and Electrical. The assessor should be able to identify common building materials, techniques and structural/architectural system types/elements, be proficient at reading drawings and engineering reports and have experience identifying common problems related to architectural/structural systems. The lead architectural/structural assessor may be supported by less experienced staff during the inventory and assessment.

### B. Year Installed

- In some cases basement wall sections may be replaced as an individual repair or partial replacement. These areas would have a different age. The RPAD construction and renovation dates should be confirmed. If dates are not appropriate, the age of the basement walls must be estimated. The building occupants or other facilities staff may be able to provide some information.

- If construction drawings or as-builts are available, look for date published to assist with determining age of materials.
- Additions, new wings or major renovations likely require identifying separate foundation component sections with different ages.
- In the case of basement walls, the assessor must use judgment in sectioning basement walls. These components should be sectioned in the manner they are generally managed. If there are new basement walls, a separate section for a single new foundation is not necessary. However, if there are two major types or ages of basement walls, then separate sectioning is a good idea.

### **C. Inventory/Assessment**

- If as-built drawings can be located, they should indicate foundation type, material and quantity.

## **V. Inventory / Assessment Data Collection Sheet**

Many assessors use floor plans or a notebook. Use whatever collection method works best for the individual assessor.